

Name: _____

Answer Key

Period: _____

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Sketch the graph of each equation. Find all points of intersection of each pair of graphs. (Hint: use substitution to find the points of intersection!) Use the quadratic formula (above) or FOIL to factor.

1. $x^2 + y^2 = 65$
 $y = x - 3$

$$x^2 + y^2 = r^2 \quad r = \sqrt{65}$$

$$x^2 + (x-3)^2 = 65$$

$$x^2 + x^2 - 3x - 3x + 9 = 65$$

$$2x^2 - 6x - 56 = 0$$

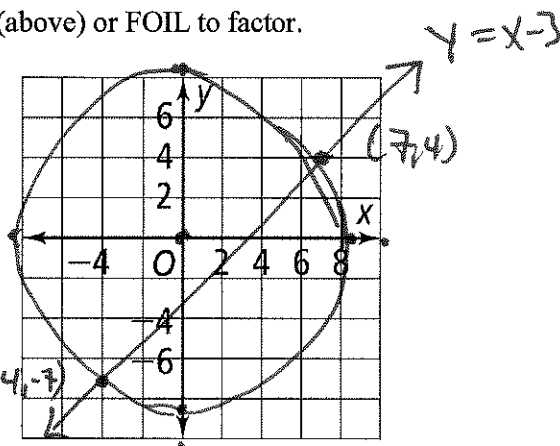
$$ax^2 + bx + c = 0$$

$$a=2; b=-6; c=-56$$

$$x = \frac{6 \pm \sqrt{(-6)^2 - 4(2)(-56)}}{2(2)}$$

$$x = \frac{6 \pm 22}{4}; \quad x = 7; 4 = y$$

$$x = -4; -7 = y$$



2. $x^2 + y^2 = 10$
 $y = 3$

$$r = \sqrt{10}$$

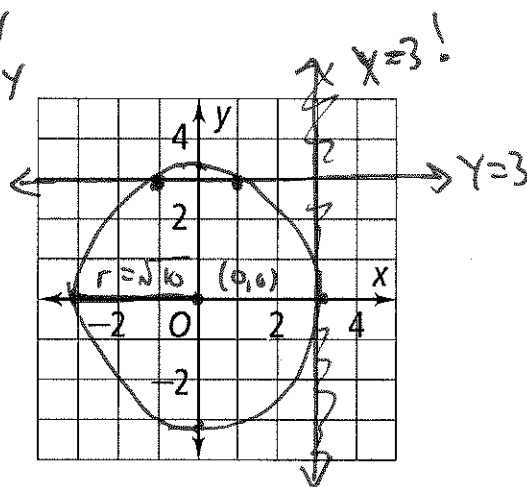
$$x^2 + 9 = 10$$

$$x^2 = 1$$

$$x = \pm 1$$

$$x = 1; y = 3$$

$$x = -1; y = 3$$



3. $(x+2)^2 + (y-2)^2 = 16$ $r = 4$
 $y = -x + 4$

$$(x+2)^2 + (-x+4-2)^2 = 16 \rightarrow (-x+2)^2$$

$$x^2 + 2x + 2x + 4 + x^2 - 2x - 2x + 4 = 16$$

$$2x^2 + 8 = 16$$

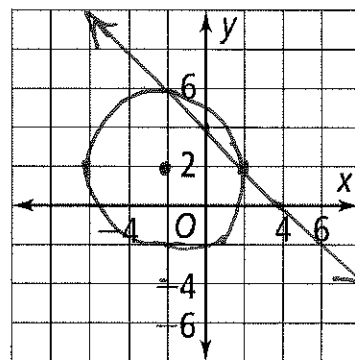
$$2x^2 - 8 = 0$$

$$x^2 - 4 = 0$$

$$x^2 = 4$$

$$x = 2; y = 2$$

$$x = -2; y = 6$$



Use the information provided to write the equation of each circle. $(x-h)^2 + (y-k)^2 = r^2$

9) Center: $(13, -13)$

Radius: 4

$$(x-13)^2 + (y+13)^2 = 16$$

11) Ends of a diameter: $(18, -13)$ and $(4, -3)$

$$C = \left(\frac{18+4}{2}, \frac{-13-3}{2} \right) = (11, -8)$$

$$d = \sqrt{14^2 + 10^2} = \sqrt{196 + 100} = \sqrt{296} \approx 17.2$$

$$r \approx 8.6 \quad (x-11)^2 + (y+8)^2 = 74$$

13) Center lies in the first quadrant

Tangent to $x = 8$, $y = 3$, and $x = 14$

10) Center: $(-13, -16)$

Point on Circle: $(-10, -16)$

$$(-10+13)^2 + (-16+16)^2 = r^2 = 9$$

$$(x+13)^2 + (y+16)^2 = 9$$

12) Center: $(10, -14)$

Tangent to $x = 13$

$$r = 3$$

$$(x-10)^2 + (y+14)^2 = 3^2$$

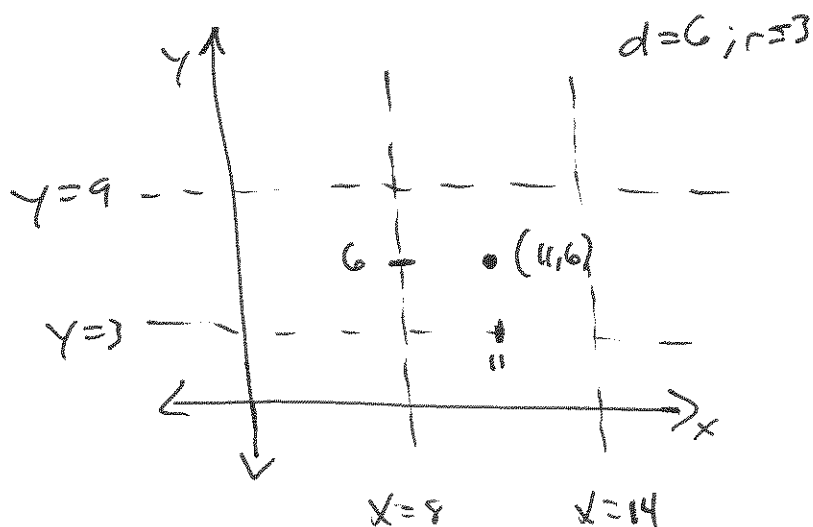
14) Center: $(0, 13)$

$$\pi r^2 = 25\pi$$

Area: 25π

$$r^2 = 25$$

$$x^2 + (y-13)^2 = 25$$



$$(x-11)^2 + (y-6)^2 = 3^2$$